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[redacted] log #2762 25X1

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Copy No. b of a-g 25X1

[redacted]

March 8, 1971

ACTIVITY SUMMARY

To: John C.

25X1 From: [redacted]

Subject: Activity Summary
Facility Visit, Contract [redacted] 25X1

25X1 Reference: [redacted]201201-AS-31

Dates: March 3-4, 1971

25X1 On March 3-4, [redacted] visited the sponsor facility
25X1 under [redacted] for performance of the laboratory support program. The primary activities of this program included:

1. Specification of the design parameters of the phase components for filters for in-line coherent optical processes. The two aberrations considered are defocus and image blur.

2. Viewing of additional imagery for OIM processing at a later date.

3. Discussions regarding program direction for completion of OIM characterization, initiation of the coherent in-line processes, and basic organization towards a detailed program plan including in-line coherent and holographic processes.

4. Delivery of some special optical cement for mounting filter components, and the design of jig plates for holding these components.

Declassification Review by NGA/DoD

GROUP 1
EXCLUDED FROM AUTOMATIC DOWNGRADING AND DECLASSIFICATION

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5. Generation of a program plan for the weeks of March 8 and 15, 1971

The following trip is scheduled for 10, 11 March by R. [redacted] The objectives are to view status and accuracy of phase calibration work, and prepare it for actual production of phase masks. Also to specify amplitude masks and the best method for their generation, and to review target requirements for in-line image processing tests.

A program plan, generated for the next two weeks was left with John. Copies of the lab notebook will be included with the monthly progress report, although Xerox copies were left with John for immediate utility.

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Program Plan

To John C.

25X1

From [redacted]

Subject Program Plan for weeks of 8 & 15 March 1971

Date 4 March, 1971

The present status of this program can be summed up by noting :-

① The amplitude filtering OIM program is being concluded with measurement of the system spatial frequency response and correlation with analytical data. Part time continuation will be maintained to put together an album of illustrations to demonstra typical performance and system information gain. This album was

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© The coherent in-line processing program is being built-up with present emphasis on fabrication of a filter bank for processing of defocused and linearly smeared imagery. The program will be emphasized further now that Skip can contribute to the effort and we will start generating imagery for processing during the coming two weeks and define program requirements for pursuance of the in-line objectives. This will include both laboratory prepared and operational imagery. The latter case should be engineering through focus & image blur

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samples at first, and then progress to other continuous tone samples. The engineering tests usually include a test target that can demonstrate system performance.

(3) A third area that we can initiate is to continue with the holographic work that we initiated at the start of this program. We should first compare the in-line with the holographic filters, define their capabilities and best areas for application of each, and apply the holographic filters to operational cases as we did (under #2 above) the in-line filters.

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Based on previous experience I can suggest that the probable outcome will demonstrate in-line processes best for restoration of continuous tone imagery and that holographic processes best for detection purposes, or for functions that vary at high frequency in Fourier space and require holographic methods for recording.

As we progress further into these program areas, and as given in the following program outline, we will commence several method of hybrid processing, especially utilizing computer derived and generated filters.

In outline, the program plan for the next two weeks includes the following:

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1. Continue with the phase calibration effort. This should be concluded by the end of the week of 15 March. Thereafter we will be fabricating the phase component of filters utilizing this calibration data,
2. Use the specifications and tolerances given for the phase component of in-line filters, for correction of defocus and linear image blur, and have the masks fabricated. This is a two step process with larger masks produced on the coated mylar, and photographically reduced to correct scale on a high resolution emulsion (3400 or equivalent). These masks will be used, starting about the week of

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15 March, for fabrication of the phase plates for the filter bank

3. Specify the requirements for the amplitude component of the in-line filters. [redacted] will provide this 25X1 the week of 8 March. Also, the best method for their fabrication will be specified.

4. Outline requirements for the in-line processing program. This outline will be generated by [redacted] 25X1 the week of 8 March and subsequently be used to generate the detailed plan for the in-line coherent processing work.

5. Specify requirements for generation of lab prepared imagery. This imagery will be used to test system response

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and improvement capabilities and to demonstrate same with binary and continuous tone imagery. At this time we should also specify best methods for generating the defocused and linearly blurred imagery. Later on we should select cases from operational imagery.

6. Continue with selection of operational imagery for amplitude OIM objectives, especially for demonstration of information gain that can be obtained. We should devote several hours per week to this objective. Amplitude OIM processing should be planned for the week of 15 - 22 March, 1971.

7. Continue with characterization of

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frequency enhancement. This will include final reduction of the line target data and performance of edge trace analysis. This work should be completely reduced and reported by the latter half of April.

8. As a point not to be overlooked, put together the information to compare the OIM result with dupe positives of different stock, to illustrate that the OIM output was better than duping can provide in conventional systems.

An outline of phase plate requirements is given in the Xerox copies of our notebook. Reference pages 90 & 91 for a summary of the data and page 43 for the formating.

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Schedule of noted items in Program Plan for weeks of 8 + 15 March, 1971

Item no.	Dates 8 9 10 11 12	15 16 17 18 19
1	XXXXXXXXXXXXXXX	XXXXXX
2	XXXXXXXXXXXXXXXX	XXXXXXXX
3	XXXXXXX	
4	XXXXXXXX	
5	XXXXXXXX	XXXXXX
6	XXX	XXX
7	XXXXXXXXXXXXXXXX	XXXXXXXXXX
9	XXXXXX	XXXXX

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